Test report no.: *Prüfbericht-Nr.:*	**CN2413E3 002**	**Order No.:** *Auftragsnr.:*	168487318	**Page 1 of 16** *Seite 1 von 16*
Client reference no.: *Kunden-Referenz-Nr.:*	N/A	**Order date:** *Auftragsdatum:*	2024-07-04	
Client: *Auftraggeber:*	**BCS Automotive Interface Solutions (Suzhou) Co., Ltd.** No. 2052, Taidong Road, Caohu Street, Xiangcheng Economic Development District, Suzhou, Jiangsu, P.R. China			
Test item: *Prüfgegenstand:*	WPC			
Identification / Type no.: *Bezeichnung / Typ-Nr.:*	524B/525A WPC			
Order content: *Auftrags-Inhalt***:**	Test Report			
Test specification *Prüfgrundlage:*	CFR47 FCC Part 15: Subpart C			
Date of sample receipt: *Wareneingangsdatum:*	2024-07-05	Please refer to Photo Document		
Test sample no: *Prüfmuster-Nr.:*	A003750411-001~005 A003752463-001~005			
Testing period: *Prüfzeitraum:*	2024-07-06 to 2024-08-09			
Place of testing: *Ort der Prüfung:*	Refer to section 2.1			
Testing laboratory: *Prüflaboratorium:*	TÜV Rheinland (Shenzhen) Co., Ltd.			
Test result*: *Prüfergebnis*:*	Pass			

tested by: *geprüft von:*	x Bell Hu Signed by: Bell Hu	**authorized by:** *genehmigt von:*	x Jonathan Li Signed by: Jonathan Li
Date: 2024-10-09 *Datum:*		**Issue date:** 2024-10-09 *Ausstellungsdatum:*	
Position / *Stellung*:	Expert/Sachverständige(r)	**Position** / *Stellung*:	Expert/Sachverständige(r)

Other: *Sonstiges:* FCC ID: 2AXPS524B525AWPC
This report is for WPT only.

Condition of the test item at delivery: *Zustand des Prüfgegenstandes bei Anlieferung:* Test item complete and undamaged
Prüfmuster vollständig und unbeschädigt

* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet

V05

Remarks
Anmerkungen

1	The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request. *Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.* *Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.*
2	As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. *Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben.*
3	Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report. *Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.*
4	The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the “Zero Guard Band Rule” and “Simple Acceptance” in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019. *Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.*

Test Summary

5.1.1 ANTENNA REQUIREMENT
RESULT: Pass

5.1.2 20DB BANDWIDTH
RESULT: Pass

5.1.3 RADIATED SPURIOUS EMISSION
RESULT: Pass

5.1.4 CONDUCTED EMISSION ON AC MAINS
RESULT: N/A

Contents

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results of FCC Part 15C.

Appendix B: Photographs of the Test Set-up.

2 Test Sites

2.1 Test Facilities

Location: Shenzhen Microtest Co., Ltd.

Address: 101, No.7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
CNAS Registration No.: CNAS L5868
FCC Registration No.: 448573

The tests at the test sites have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
Wideband Radio Communication Tester	Rohde&schwarz	CMW500	149155	2024-03-20	2025-03-19
ESG Series Analog Ssignal Generator	Agilent	E4421B	GB40051240	2024-03-21	2025-03-20
PXA Signal Analyzer	Agilent	N9030A	MY51350296	2024-03-21	2025-03-20
Synthesized Sweeper	Agilent	83752A	3610A01957	2024-03-21	2025-03-20
MXA Signal Analyzer	Agilent	N9020A	MY50143483	2024-03-21	2025-03-20
RF Control Unit	Tonscend	JS0806-1	19D8060152	2024-03-21	2025-03-20
Band Reject Filter Group	Tonscend	JS0806-F	19D8060160	2024-03-21	2025-03-20
ESG Vector Signal Generator	Agilent	N5182A	MY50143762	2024-03-20	2025-03-19
DC Power Supply	Agilent	E3632A	MY40027695	2024-03-21	2025-03-20
EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2024-03-20	2025-03-19
Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00066	2024-03-23	2025-03-22
Amplifier	Hewlett-Packard	8447F	3113A06184	2024-03-20	2025-03-19
EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2024-03-20	2025-03-19
TRILOG Broadband Antenna	schwarabeck	VULB 9163	9163-1338	2023-06-11	2025-06-10
Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00066	2024-03-23	2025-03-22
Amplifier	Hewlett-Packard	8447F	3113A06184	2024-03-20	2025-03-19

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table

Table 2: Measurement Uncertainty

Measurement	Uncertainty
Occupied channel bandwidth	±3 %
Radiated spurious emissions (9kHz~30MHz)	±4.3dB
Radiated spurious emissions (30MHz~1GHz)	±4.7dB
Temperature	±1 °C
Humidity	± 5 %

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd. file for certification follow-up purposes.

3 General Product Information

3.1 Product Function and Intended Use

The Product is wireless charger with NFC function, vehicle use.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Information of EUT	Description
Kind of Equipment:	WPC
Type Designation:	524B/525A WPC
Operating Voltage:	9~16V DC
Testing Voltage:	DC 12V (Rated)
Temperature Range:	-40°C ~85°C
FCC ID:	2AXPS524B525AWPC
Technical Specification of WPC	
Frequency Range:	111-148kHz
Operating frequency	127.77kHz
Type of Modulation:	FSK
Antenna Type	Induction coil
Wireless output	Wireless 5W/7.5W/10W/15W
Technical Specification of NFC	
Frequency Range:	13.553-13.567MHz
Operating frequency	13.56MHz
Type of Modulation:	ASK
Antenna Type	Induction coil

3.3 Independent Operation Modes

The basic operation modes are:

A. The wireless charging

All wireless output modes (5W/7.5W/10W/15W) tested, only worst-case reported.

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- Block Diagram
- ID Label and Location Info
- User Manual
- Schematics
- Operation Description

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5 & 6. All testing were performed according to the procedures in ANSI C63.10: 2013.

According to clause 3.1, all tests were performed on model 524B/525A WPC in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 4: List of Accessories and Auxiliary Equipment

Name	Model No.	Manufacturer
WPC Load	/	BCS Automotive Interface Solutions (Suzhou) Co., Ltd.
DC power source	RNX-305D	SHENZHEN ZHAOXIN ELECTRONIC INSTRUMENT EQUIPMENT CO., LTD..

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 30MHz)

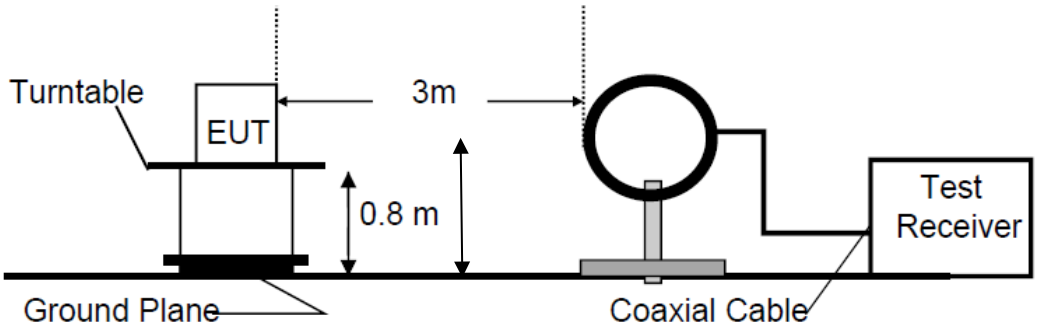


Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

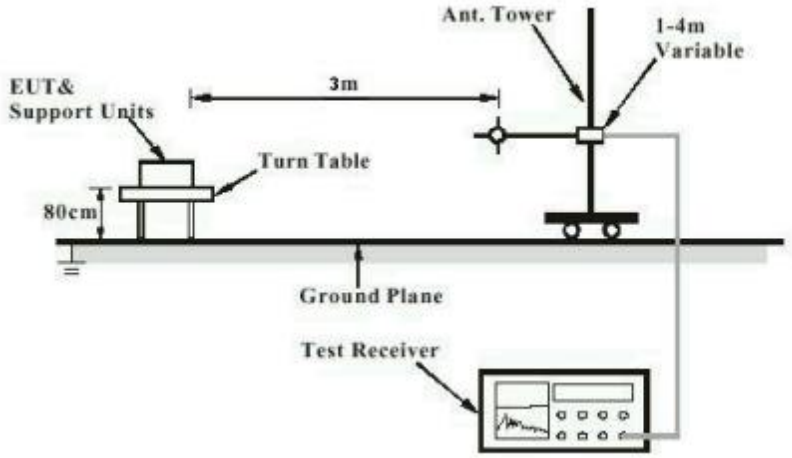
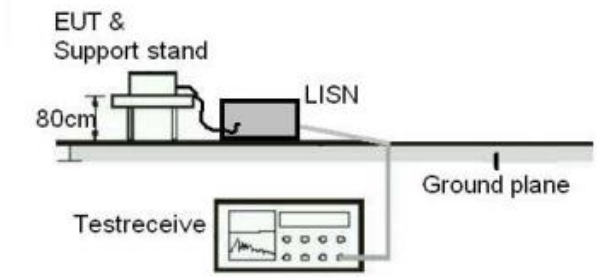


Diagram of Measurement Configuration for Mains Conduction Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Test Specification

Test standard : Part 15.203
the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has internal antenna, and the antenna is permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 20dB Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.215(c)
Basic standard	:	ANSI C63.10: 2013
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2024-07-20 to 2024-08-02
Test voltage	:	12V
Operation mode	:	A
Ambient temperature	:	23.6 ℃
Relative humidity	:	54.8 %
Atmospheric pressure	:	100.0 kPa

For the measurement records, refer to the appendix A.

5.1.3 Radiated Spurious Emission

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.209 & 15.205
Basic standard	:	ANSI C63.10: 2013
Limits	:	Refer to 15.209(a)
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

Date of testing	:	2024-07-20 to 2024-08-02
Test voltage	:	12V
Operation mode	:	A
Ambient temperature	:	Refer to test result
Relative humidity	:	Refer to test result
Atmospheric pressure	:	Refer to test result

For the measurement records, refer to the appendix A.

5.1.4 Conducted Emission on AC Mains

RESULT: **N/A**

Test Specification

Test standard	:	FCC Part 15.207(a)
Basic standard	:	ANSI C63.10: 2013
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.207(a)
Kind of test site	:	Shielded Room

DC powered only, test is not required.

6 Photographs of the Test Set-Up

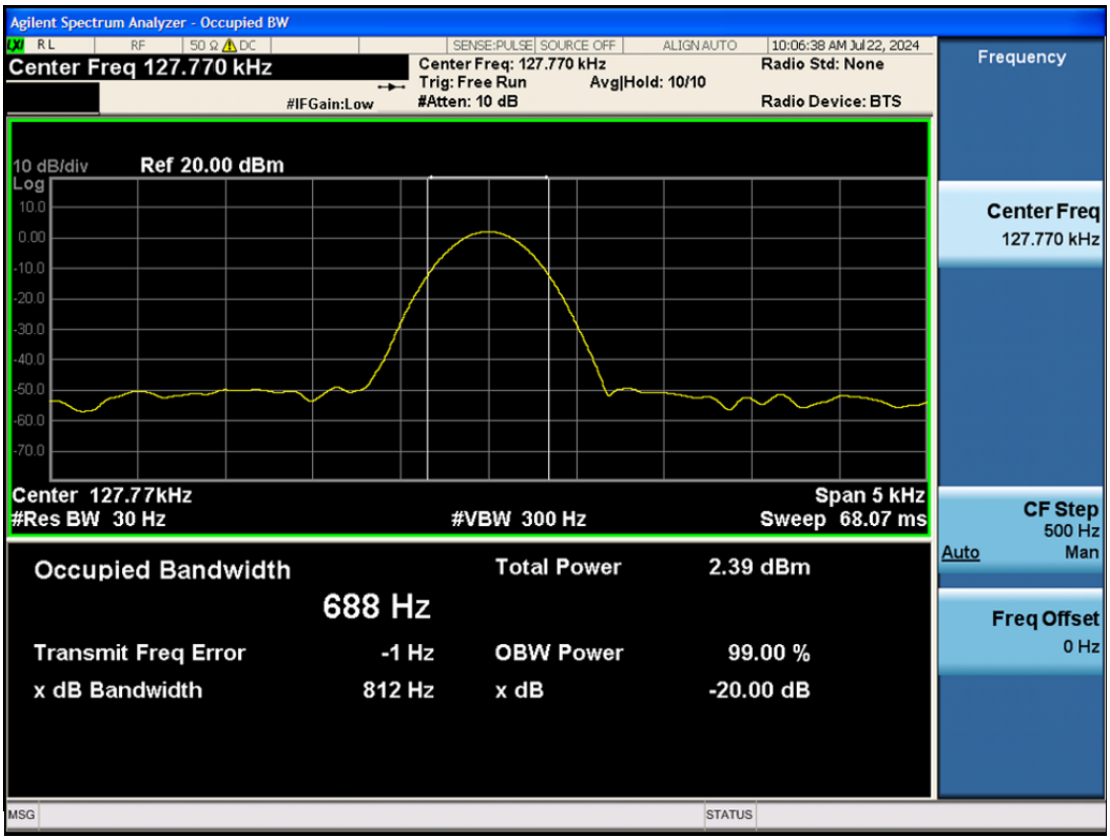
For photographs of the test set-up, refer to the appendix B.

7 List of Tables

Appendix A: Test Results of FCC Part 15C

Appendix A.1: Test Results of 20dB Bandwidth and 99% bandwidth

Test Frequency (kHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)	Limit (MHz)	Result
127.77	0.812	0.688	/	Pass



Appendix A.2: Test Results of Radiated Spurious Emission

Note: The highest waveform in the figure is Fundamental.
All polarizations for X., Y, Z tested, only the worst-case reported.

9kHz - 150KHz

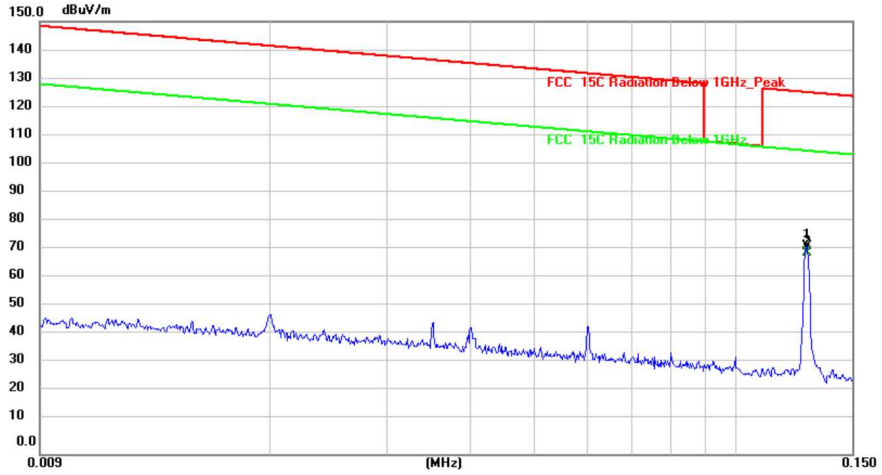
Microtest 微测检测

Shenzhen Microtest Co., Ltd.
Building A7, Zone 2, Xinhe Xinxing Industrial Park, Fuzhou
, Bao'an District, Shenz TEL: 0755-88850135 FAX: 0755-88850136

Radiated Emission Measurement

Project No.: 环形 Data :#20 2024/7/12 16:04:10

Site : RE Chamber 1 Polarization: ***Horizontal*** Temperature: 23.8 (C)
Limit: FCC 15C Radiation Below 1GHz_Peak Power: DC12V Humidity: 59 %RH
EUT: WPC
M/N: 524B
Mode: Wireless Output(15W)
Note: 直流源
WPT



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1281	51.34	20.95	72.29	125.47	-53.18	peak	
2	*	0.1281	49.10	20.95	70.05	105.47	-35.42	AVG	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESCI_1 Spectrum Analyzer: ESCI
Antenna: FMZB 1519B电场-20220612 Engineer Signature: Happy
Amplifier:

File: 环形\Data :#20 *Page: 1*

150kHz – 30MHz

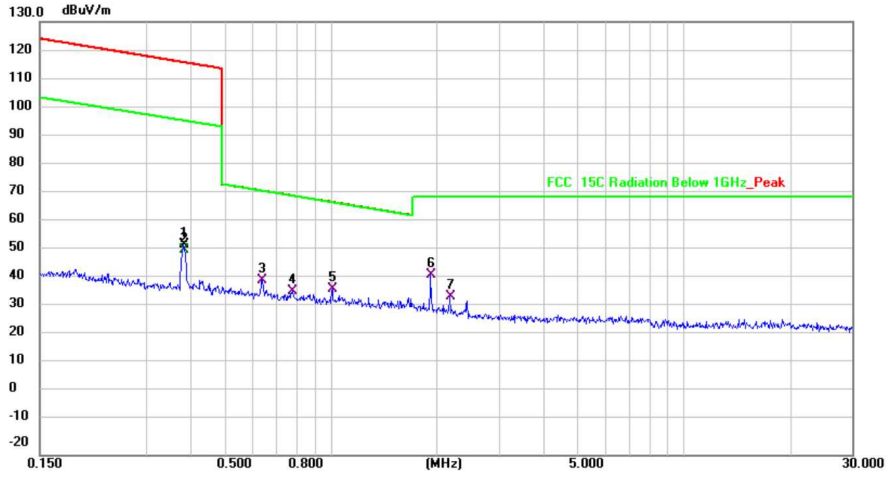
Microtest 微测检测

Shenzhen Microtest Co., Ltd.
Building A7, Zone 2, Xinhe Xinxing Industrial Park, Fuzhou
, Bao'an District, Shenz TEL: 0755-88850135 FAX: 0755-88850136

Radiated Emission Measurement

Project No.: 环形 Data :#21 2024/7/12 16:07:23

Site : RE Chamber 1 Polarization: ***Horizontal*** Temperature: 23.8 (C)
Limit: FCC 15C Radiation Below 1GHz_Peak Power: DC12V Humidity: 59 %RH
EUT: WPC
M/N: 524B
Mode: Wireless Output(15W)
Note: 直流源
WPT



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.3832	32.00	21.11	53.11	115.94	-62.83	peak	
2		0.3832	29.92	21.11	51.03	95.94	-44.91	AVG	
3		0.6372	19.45	21.19	40.64	71.52	-30.88	QP	
4		0.7793	15.62	21.25	36.87	69.78	-32.91	QP	
5		1.0103	16.17	21.34	37.51	67.53	-30.02	QP	
6	*	1.9182	21.15	21.39	42.54	69.50	-26.96	QP	
7		2.1783	13.38	21.40	34.78	69.50	-34.72	QP	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESCI_1 Spectrum Analyzer: ESCI
Antenna: FMZB 1519B电场-20220612 Engineer Signature: Happy
Amplifier:

File: 环形\Data :#21 *Page: 1*

30MHz - 1GHz

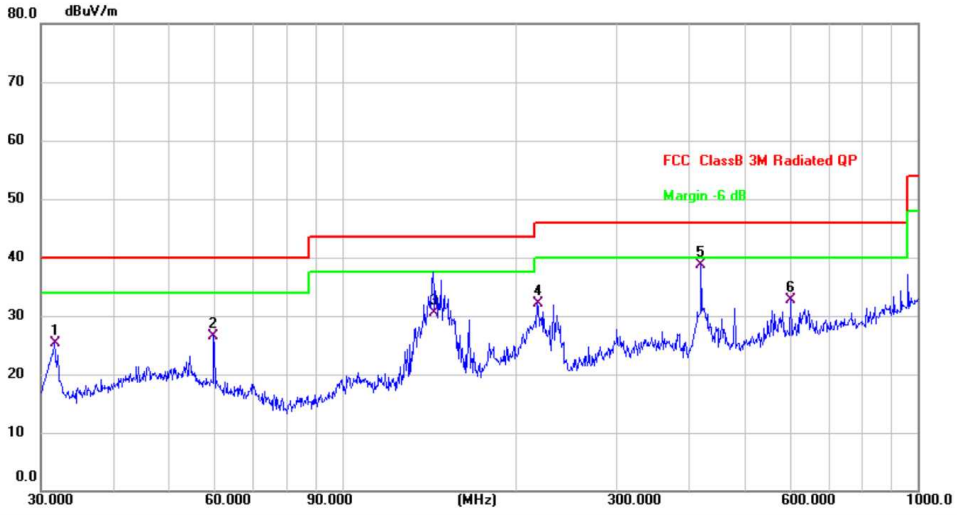
Microtest 微测检测

Shenzhen Microtest Co., Ltd.
101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe
Fuhai Street, Bao'an District, Shenzhen, Guangdong, China.

Radiated Emission Measurement

Project No.: FCC | Data :#1 | 2024/7/31 | 15:19:41

Site : RE Chamber 2 | Polarization: *Vertical* | Temperature: 22.5 (C)
Limit: FCC ClassB 3M Radiated QP | Power: DC12V | Humidity: 43 %RH
EUT: WPC
M/N: 524B
Mode: Wireless Output(15W)
Note: 实验室蓄电池+主测电脑



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		31.6202	34.99	-9.61	25.38	40.00	-14.62	QP	
2		59.8588	34.27	-7.67	26.60	40.00	-13.40	QP	
3		143.8295	39.59	-8.99	30.60	43.50	-12.90	QP	
4		218.3085	39.52	-7.51	32.01	46.00	-13.99	QP	
5	*	420.5803	41.12	-2.49	38.63	46.00	-7.37	QP	
6		601.4265	31.42	1.29	32.71	46.00	-13.29	QP	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver:
Antenna: 30MHz-1GHz 天线
Amplifier: 30MHz-1GHz 预放-通道1
Spectrum Analyzer: ESCI
Engineer Signature: Ives

File: FCC\Data :#1 *Page: 1*

Microtest 微测检测

Shenzhen Microtest Co., Ltd.
101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe
Fuhai Street, Bao'an District, Shenzhen, Guangdong, China.

Radiated Emission Measurement

Project No.: FCC Data :#2 2024/7/31 15:23:55

Site : RE Chamber 2 Polarization: ***Horizontal*** Temperature: 22.5 (C)
Limit: FCC ClassB 3M Radiated QP Power: DC12V Humidity: 43 %RH
EUT: WPC
M/N: 524B
Mode: Wireless Output(15W)
Note: 实验室蓄电池+主测电脑

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		31.7313	35.76	-9.62	26.14	40.00	-13.86	QP	
2		59.8588	33.33	-7.67	25.66	40.00	-14.34	QP	
3		148.4410	47.03	-10.13	36.90	43.50	-6.60	QP	
4	*	232.5318	48.07	-6.19	41.88	46.00	-4.12	QP	
5		300.3672	39.45	-3.83	35.62	46.00	-10.38	QP	
6		420.5803	39.72	-2.49	37.23	46.00	-8.77	QP	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: Spectrum Analyzer: ESCI
Antenna: 30MHz-1GHz 天线 Engineer Signature: Ives
Amplifier: 30MHz-1GHz 预放-通道1

File: FCC\Data :#2 *Page: 1*